



## Chapter 2. Inclusive Learning and Teaching in a Digital World

*Written by: Balkovic, M., Chavez, O.M., Dhirathiti, N., Holmes, W., Ikeda, K., Negrescu, V., Patrick, J.*

### 1. Introduction

---

Introducing learning and teaching platforms based on digital technology has been an on-going process for more than a decade now all across Asia and Europe. Within the two regions, the initiative in introducing digital technology to teaching and learning has been discussed at the supra-national level in the case of Europe, while governments and HEIs in Asia seem to individually plan and implement the policy respectively at its own pace. With diverse contexts and backgrounds of countries in Asia, policies at the national and institutional level can be examined primarily based on the specific contexts of each country's educational systems and orientations. However, the COVID-19 pandemic has abruptly changed the scenario and pace of implementing digital technology in teaching and learning in these regions. These changes were exponential. It was inevitable for every country and its respective education institutions to consider the way in which teaching and learning can be delivered and provided through digital and on-line technology. As mentioned by the OECD, "One change likely to remain after the pandemic ends is the intensified use of digital technologies in the delivery and management of higher education" (Weko & Morley, 2020).

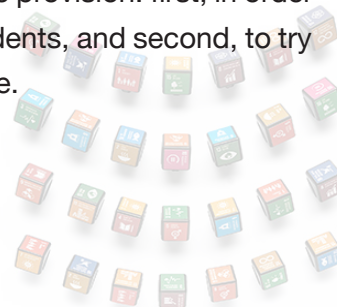


## 2. Inclusion in Digital Teaching and Learning: Dimensions to Consider

---

Inclusion is seen as one of the policy outcomes when discussing integration of digital technology into teaching and learning in higher education. While there is literature examining factors leading to digital exclusion in using technology as a delivering mode of education (Clarida et al., 2015), factors to consider leading to the successful use of digital technology in teaching and learning, especially during the COVID-19 era, are just as important. This section suggests that there are a few pillars that both national governments and HEIs may need to consider when introducing digital technology into traditional teaching and learning processes and methods, and into other HEI functions.

The first dimension to consider is the **diversity of education providers**, for example who are the key players providing knowledge? As will be discussed later in the chapter, education providers in today's digital world vary greatly. In some parts of the world, especially in East Asian countries, the national and local governments have played a significant part in developing courses; while in some other geographical locations, the private sector has played an integral part in delivering digital content. Again, in some countries, shared resources at the regional level or even at the global level is the main approach used by both national governments and HEIs. These shared resources are being developed and used not only to cut the cost of production, but also to ensure quality and efficacy. Furthermore, such content and approaches are being evaluated by numerous users and learners. This also raises the issue of inclusiveness, with new key players other than just the traditional HEIs acting today as content providers, and primarily offering online courses for upgrading skills rather than for diplomas or degree certificates. Although such on-line content is not part of higher education per se, it should not be neglected, due to an increase in the recognition of prior learning (RPL) used by HEIs. These approaches can transform non-formal content and approaches into formal diplomas and certificates issued by HEIs. Lack of inclusiveness here could originate not only from technology but also from language barriers for some learners. Concretely, some of the established commercial digital content platforms are playing an increasingly dominant role, creating difficulties for small countries (and their learners) which are not capable of producing content in their own language or adapted to their educational curricula. Also, the ability and knowledge of teachers for teaching using digital platforms and approaches are of vital importance for knowledge provision: first, in order to provide high quality teaching in these circumstances to all their students, and second, to try to enhance the inclusion of marginalised learners as much as possible.



The second dimension of examining digital technology as a conduit to increase inclusiveness in teaching and learning is a focus on the **diversity of the knowledge recipients**. One of the key pillars of integrating digital technology into the traditional teaching and learning is to ensure accessibility, sustainable growth and inclusive society (Draffan & Rainger, 2013; Tan, 2021). When national governments or HEIs are planning to transition teaching and learning into a blended or a full online method, factors such as learner demographics – including gender, age or cultural background, geographical location, and personal or life experiences – are vital to the digital teaching and learning design. While integrating technology into teaching and learning can have positive implications, both national governments and HEIs have to ensure that the digital teaching and learning system used will not undermine inclusion further.

The third dimension is the consideration **of platforms, infrastructure and appropriate devices** to offer digital teaching and learning. The choice of technology should ensure the inclusion of learners from different backgrounds, locations and experiences (including level of basic IT skills) as previously discussed. HEIs, in both continents, are the key implementers, deciding how to design or redesign the teaching and learning environment to suit all learners and to enhance digital engagement. In other words, digital technology should be seen as an enhancer and not as an impediment to teaching and learning for the majority of learners in a given setting.

The sub-sections below introduce practices in Asia and Europe to reflect the status quo of inclusive digital teaching and learning, including the examinations of four different levels: the European supra-national policy level, national level, institutional level and individual adjustments of various governments and HEIs in both continents.

### 3. Regional Policy Overview

---

In this section the authors examine the Europe-wide policies only, as there are no overarching policies in Asia currently that could be reviewed similarly.

Digital dimension of higher education has become one of the key strategic priorities at the EU level with Green and Digital Transitions being one of the six priorities of the Commission Communication on Achieving the European Education Area by 2025 (European Commission, 2020A), and operationalised further in the Digital Education Action Plan (European Commission, 2020B), resetting education and training for the digital age, both adopted in September 2020. Moreover, in the Council Conclusions on Digital Education in Europe's Knowledge Societies



(Council of the European Union, 2020A) the Ministers for Education of the EU Members States recognised that digital education technologies open up new possibilities as well as challenges for learning and teaching, and are an important factor in ensuring high-quality and inclusive education and training. These policy directions were further reinforced through European Parliament's Resolution on 'The Future of European Education in the Context of COVID-19' dated 22 October 2020 (European Parliament, 2020), and in 2021 through the European Parliament's Report on shaping digital education policy (European Parliament, 2020).

The digital dimension of higher education in the policy documents at the EU level comprises several components, such as: pedagogical use of digital technology to support and enhance teaching, learning and assessment, development of digital resources and tools, enhancing innovative pedagogies and digital skills of teachers and learners, as well as assuring equal access to digitally supported high-quality and inclusive higher education opportunities and availability of necessary digital devices, both for students and staff. Moreover, higher education is expected to respond to the changing labour market, growing influence of artificial intelligence, new job profiles and the demand for widespread digital competences. The COVID-19 pandemic gave additional impetus to a wider European digital agenda as the EU Ministers for Education summarised in their first reaction to the COVID-19 crisis, in the Council Conclusions on Countering the COVID-19 Crisis in Education and Training, adopted during the Croatian Presidency of the EU Council in 2020 (Council of the European Union, 2020B). The High-Level Event titled 'To Engage, to Care, to Foster – Digital Education Shaping Today's and Tomorrow's Societies' which took place on 24 May 2021 in Lisbon under the Portuguese Presidency of the Council of the European Union also promoted best practices in digital education (Council of the European Union, 2021).

The same digital agenda goes beyond the EU, encompassing 49 European countries of the European Higher Education Area (Bologna Process), including the United Kingdom (post-Brexit). As stated in the 2020 Rome Ministerial Communiqué, adopted in November 2020, the European Ministers for Higher eEducation committed to "reinforcing social inclusion and enhancing quality education, using fully the new opportunities provided by digitalisation". Moreover, the Ministers committed, among other things, "to supporting higher education institutions in using digital technologies for learning, teaching and assessment, as well as for academic communication and research, and to investing in the development of digital skills and competences for all" (EHEA, 2020A). In the Annex III to the 2020 Rome Ministerial Communiqué, the Ministers agreed to



support HEIs in creating “tailor education provision to the needs of different types of learners and to build a culture for equity and inclusion” by, among other things, “exploring opportunities offered by digital technologies” (EHEA, 2020B).

## 4. National Policy and Implementation Overview in Asia & Europe

---

### The Asian Context

---

Asia has experienced diverse policy transitions from traditional to digital teaching and learning across the region. However, it is undeniable that national governments have played a key role, together with different other players, in gravitating countries towards the integration of digital technology in higher education. Countries in East Asia especially China and Japan, have established a general policy on enhancing teaching and learning experience before the COVID-19 outbreak. China, for example, has launched open platforms for teaching and learning with Chinese MOOCs, some of which have been developed by leading Chinese universities including XuetangX, CNMOOC and iCourse International (Dong et al., 2017). The national government has been a strong supporter of providing national-quality, provincial-quality and institutional-quality courses covering a vast array of subjects for students (Tili et al., 2019). The national policy announced by the Chinese government known as ‘disrupted classrooms, uninterrupted learning has been echoed throughout the country (Liu, 2020).

In Singapore and Hong Kong, not only are national governments developing support for digital teaching and learning, but there is also a serious involvement of the private sector and non-profit organisations in using digital technology to harness for learning and classroom teachings. In this sense, digital learning is enhancing necessary skills, be it the so-called 21st century skills or other innovative learning experiences. Many digital platforms are known as ‘leapfrog pathways’, as they highlight how innovation and digital technology can help education develop from traditional one-way teaching and learning to an approach in which students are able to develop the skills needed for the future (Winthrop & Ziegler, 2019).

While the government has been playing a vital role in introducing and supporting digital learning platforms in China, the COVID-19 pandemic has played as an external force (‘gaiatsu’) for a



country like Japan to establish initiatives towards online and digital teaching and learning. Although Japan's market for online learning is expected to grow by 50% by 2023, the government suggests that the COVID-19 outbreak has been the key factor accelerating the growth (Nikkei Asia, 9 March 2020). However, compared to China, Japan is still only slowly taking up digital technology in education which requires many supporting systems such as mobile payments and an extensive network of open platforms. Similar to Japan, in Southeast Asia it is evident that the COVID-19 pandemic has played a major role in expediting national policies for initiating and reviving the countries' digital learning and teaching platforms. In Malaysia, the Ministry of Education announced a platform in 2020 called 'DELIMa' or the 'Digital Education Learning Initiative Malaysia' which offers applications and services required for educators and students to collaborate online. The platform promotes the core tenets of the country's approach to education transition: inclusiveness, lifelong learning and the commitment of the future digital needs (Sharon, 2021).

The collaboration between government units is also vital to the success of digital teaching and learning, especially post-COVID-19. Indonesia is a good example of a cross-ministerial collaboration, including the Ministry of Education and the Ministry of Religious Affairs, that is addressing the shift to online learning and geographic or socio-economic diversity across the country. The collaboration has provided students and education institutions free access to online learning, teaching and learning materials as well as other financial reliefs.

## The European Context

---

The digital dimension of teaching and learning in higher education has been embedded in wider national policies on quality teaching and learning that are most often part of overall national strategies for higher education. According to the Report on National Initiatives in Learning and Teaching in Europe (Bunescu & Gaebel, 2018), prepared by the European University Association (EUA) in the framework of the EFFECT Project "having a dedicated national strategy or framework for learning and teaching is the least widespread approach". The digital dimension of higher education has often been seen as an important component of widening quality education opportunities for disadvantaged groups of students. Digitalisation has been seen as contributing to, at least, components of higher education policies that are quality and inclusion (social dimension in higher education).



The COVID-19 pandemic has affected and put unprecedented pressure on higher education systems and it has brought major challenges to learning, teaching and assessment. From the outbreak of the pandemic, the EU Member States made efforts to ensure the continuation of learning and teaching, by shifting to distance teaching and learning and by using digital solutions. A key issue was assuring the safety of teachers and students. However, according to the available reports, there were different starting positions between the EU Member States as well as between HEIs across the EU in terms of digital maturity of the systems and institutions: the availability of digital learning and teaching tools and the level of development of digital skills of students and teachers, including their digital pedagogical competences.

As stated in the Council Conclusion on Digital Education in Europe's Knowledge Societies, "experience of digital education technologies across the Union differs and depends to a great extent on policy and governance frameworks, infrastructure and technical facilities as well as financial and human resources. These include in particular well-prepared teachers, trainers, educators and other pedagogical and administrative staff, including institution leaders in education and training" (Council of the European Union 2020A). And the digital gaps across the Union, already existing between the institutions and among the staff and students, have increased further with the COVID-19 pandemic.

With the pandemic, various platforms for exchange of information and good practices between the Ministries of Education were established. The EU Member States frequently reported that they found that the biggest challenges for higher education were:

- Enhancing digital pedagogies, to avoid replicating traditional face-to-face forms of teaching and learning;
- Assuring good quality teaching and learning experience and skills development through practical training and work-based learning, since these parts of curricula cannot be easily transferred into a digital environment;
- Assuring that the achieved learning outcomes correspond to intended learning outcomes, and that assessment methods are reliable, so that students may demonstrate that they have achieved the intended learning outcomes;
- Creating alternatives to European and international learning mobility opportunities, by using virtual mobility.



Another set of challenges, highlighted by the COVID-19 pandemic, involves ensuring inclusion and equal access to quality distance learning opportunities – because many students, especially those from disadvantaged backgrounds, lack digital skills and/or access to technology or the Internet. A fear shared by the EU Member States is that the wide scale shift to digital teaching and learning may reinforce pre-existing structural, social-economic and gender inequalities. In summary, the perceived effect of the pandemic is that it further accelerated the already ongoing digital transformation of higher education systems across the EU, and that it brings challenges and opportunities – both to assuring the quality of higher education, as well as to inclusion in higher education systems across Europe.

## 5. Institutional Adjustments: Good Practices for Digital Learning and Teaching

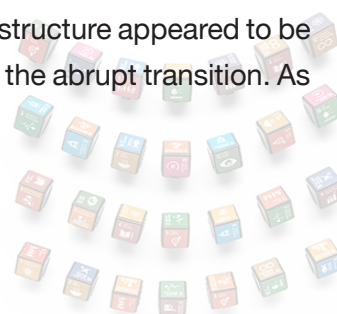
---

### The Asian Context

---

During the COVID-19 pandemic, impromptu measures were launched as part of campus management. Many universities and education institutions had already adopted long-term measures for the “new normal” campus operations. In general, before COVID-19, China and most of East Asian countries followed national policy guidelines for introducing digital teaching and learning as part of the education plan. However, for the other Asian countries, government policies and the implementation at the institutional level only became concrete after the start of the pandemic. Education institutions are typically focusing on investment for IT infrastructure especially the campus IT networks and coverage, the training of staff on online and virtual teaching and learning, and impromptu situational-based provisions such as free sim cards and financial supports. Each country achieved a different degree of successful preparation, with some contextual reservations. Japan, for example, has been struggling with the transition from traditional paper-based educational system. The reluctance to adopt digital learning and teaching has been associated with concerns about inappropriate content and equal access to the digital modes of learning.

Apart from Chinese-speaking countries, where the investment in IT infrastructure appeared to be in place long before the COVID-19 pandemic, others are struggling with the abrupt transition. As



mentioned in the previous section, the national policy announced by the Chinese government on ‘disrupted classrooms, uninterrupted learning’ has been well accepted by education institutions with the focus on contextualised alternatives to online education, specifically students from under-privileged individual groups and/or communities (Liu, 2020). This is an example of how both governments and education institutions are addressing the ‘digital divide’, especially when examining the long-term issue of access to digital learning and teaching platforms and activities.

Turning to Southeast Asia, major universities in Thailand, for example, have provided instructors/educators with special training on online course design, teaching tools and online evaluation methods and have developed institutional policies towards a future of hybrid digital learning and teaching. As seen in some institutions, budgets have been dedicated to the support for academic staff, to develop online teaching and learning skills and materials. Ad hoc reactions can also be seen in many universities in Thailand, Indonesia and other countries. Many have reacted to the COVID-19 situation based on their respective contexts by providing free SIM cards, tablets or other mobile units for students, to enable them to access from home the online teaching seamlessly during the lockdowns. As mentioned, one of the most important dimensions is the investment in IT infrastructure, including IT bandwidth and coverage, as well as online teaching platforms and solutions, such as Webex, Microsoft Teams, Zoom and so on. Not only the investment in IT infrastructure which is deemed necessary for the successful implementation of digital teaching and learning, but the co-utilisation of resources is also as important. Many existing online courses and platforms developed by respective education institutions need to be shared. The ASEAN University Network for Technology-Enhanced Personalised Learning (AUN-TEPL) is one such example where leading universities under the ASEAN University Network (AUN) are working together to explore the possibilities of sharing online resources, headed by universities in Singapore, Thailand and Malaysia. These teaching and learning resources which have been established based on the initial response of the institutional needs from surveys from 51 members of the ASEAN +3 University Network in 2018. The network aims to become a platform on which further collaboration could be pursued and shared through technology-enhanced personalised learning (AUN-TEPL, 2021).



## The European Context

---

The most recent Survey on ‘Digitally enhanced learning and teaching in European HEIs’ (Gaebel et al., 2021), involving 368 HEIs from 48 countries of the European Higher Education Area (EHEA) was conducted by the European University Association (EUA) and published in January 2021. It brought some important findings on the digital dimension of teaching and learning in higher education, distinguishing between before and since the start of the COVID-19 crisis, and compared with a similar survey conducted in 2014. According to the report, with the outbreak of COVID-19, all institutions managed to pivot to blended and online learning. However, resources were in many regards insufficient. For example, while 90% of HEIs had online library services in place before the pandemic, 65% reported that they wanted to enhance them as an immediate reaction to the crisis.

Moreover, three-quarters of the respondents indicated that they had concrete plans to boost digital capacity beyond the crisis. The majority of institutions (88%) reported having a strategy for digitally enhanced learning and teaching (DELTA), usually integrated into a wider institutional strategy. Finally, the HEIs reported that the urgent switch to distance teaching and learning did not assure sufficiently developed pedagogical approaches, which sometimes affected the quality of the teaching and learning. Before the pandemic, blended learning (which they define as “combining face-to-face classroom teaching and the innovative use of ICT technologies”) was the most popular delivery mode, used in 75% of institutions across the EHEA. In response to COVID-19, some institutions also started to provide hybrid learning and teaching (“physical classroom learning in combination with online attendance: some students attend in the classroom, others attend at the same time remotely online”). Also, before the pandemic, online degree programmes were provided by one-third of institutions (36%), while the number of HEIs that offer MOOCs increased since the survey conducted in 2014. In addition, short online non-degree courses (such as micro credentials) were offered by 50% of institutions. Digital assessments slightly increased before the pandemic, in both conventional and online learning, again compared to 2014.

The number of HEIs using digital credentials is still relatively low. A quarter of the institutions (25%) offers virtual mobility for its students. Meanwhile, the majority of institutions include training for generic and sector-specific digital skills, as well as ethical and data literacy and safety skills as part of their curricula. However, digital skills are often only included in some study programmes or as a voluntary offer. The survey concluded that Virtual Learning Environments (VLE) and online



labs could be strengthened as could online services for prospective students. Finally, over 60% of institutions indicated that they include staff and students in the governance of digitally enhanced teaching and learning, had a dedicated budget to support digital transformation, and established clear policies and processes for deciding on new technologies. However, about every second institution also recognised the need to enhance or develop horizontal policies on data protection, cyber security, prevention of plagiarism, ethics, intellectual property and examinations and testing.

## 6. Individual Adjustments: Students' and Educators' Inputs and Readiness for Digital Learning and Teaching

---

### The Asian Context

Four major determinants on digital teaching and learning in Asia mirror those in Europe, as elaborated in the following section. These determinants include attitudes towards digital teaching and learning, technical capacity of digital mode of delivery, knowledge of use on both instructors' and students' side and effectiveness of digital teaching and learning methods.

First, **the attitudes of** students towards digital teaching and learning affects the outputs and outcomes of the platform inclusiveness. According to the PISA survey in December 2020, less than 20 percent of students in some East Asian countries including Japan supported the use of digital technology as part of their classroom experiences (Obe & Okutsu, 2020). On the other hand, a country like Singapore has started to address the issue of 'digital natives', the young generation of students who have grown up around technology both in breadth and depth (however, 'digital natives' as a useful term has long been disputed in academia, Helsper and Eynon, 2010). Their experiences in learning and teaching embedded in the use of digital technology are much wider and deeper than before, which changes the interaction between them and educators. Students in Thailand have expressed their disappointments with full digital teaching and learning methods as a campus life is considered important for their teaching and learning experience. The data, which was elicited from approximately 1,300 students through



the Mahidol University Student Council in April 2020, also demonstrates that around 50% of students reported 'ready' while 49% reported 'not ready' for the full online teaching and learning due to the COVID-19 outbreak. Among those who were not ready, the unfavourable learning environment and the coverage of the Wi-Fi/internet signals were reported as the highest obstacles at 70% and 52% respectively (Mahidol University Student Council Survey, 2020).

With respect to the **ability to use the digital technology**, educators need to be given professional training to enable them to be able to use digital tools effectively. Hence, digital technologies which are being integrated into post-COVID-19 teaching and learning contexts begs questions of the readiness of teachers and educators to be effective facilitators. Meanwhile, students need to be ready to optimise their own blended learning journeys, made available by the technologies (Natarajan, 2020). Correlated with the ability to use digital technology is the opportunity to access the technology itself. The digital divide is still a major problem in countries in Southeast Asia, considering both geographical and economic factors. In Thailand, for example, only 25% of students are reported to have computers for accessing online learning, while the majority of students, 66% use their mobile phones to study online (NXPO, 2020).

In terms of the **effectiveness of the digital teaching and learning**, more studies will be needed in the future to evaluate the inputs, process and outcomes. As of now, the phenomenon in Singapore of active engagement of major stakeholders coincides with a new paradigm of co-production of public services, education included, in which the end users or those who once were recipients of public services are becoming more involved in formulating and implementing the policies from the start. Education is one such public policy area, in which policymakers both at the national and institutional level need to adjust their mindsets to provide opportunities for students to participate more, especially through digital technologies. However, for some other countries in East Asia, major national policy directions are the key determinant for the success and effectiveness of the transition from traditional teaching and learning to a new approaches using digital technologies. A huge investment by the governments and clear policy directions set apart countries like China from relatively slow responders like Japan. However, with the economic leverage, countries in East Asia will soon be able to adapt at a quicker pace towards introducing digital technology in teaching and learning as their long-term strategies at the national and institutional level. Finally, for Southeast Asian countries in particular, the role of institutional leadership will play a major part in preparing educators and students to transition to the 'new normal' of digital teaching and learning.



## The European Context

---

According to ‘Learning and teaching paper #7: Digital skills - Where universities matter’ (Jørgensen, 2019) published by the EUA in 2019, in the discussion on digital skills developments, it is suggested that universities have a key role for all three groups of digital skills needs. The needs of three different groups of learners are distinguished:

- 1 | ICT specialists who need training in ethics (including privacy and bias) and where universities need to ensure diversity,
- 2 | learners who will enter fields where the professional practice is already disrupted by digital technologies, for example medicine and law,
- 3 | learners who face unpredictability in how digital technologies will impact their careers, but who still require knowledge about them.

As for students more generally, the results of the Survey (Doolan et al., 2020) conducted by the European Students Union (ESU) and the University of Zadar, Croatia, identified that students felt a lack of stability due to the COVID-19 outbreak, while a significant number reported mental health problems and fears about losing work and about the future. Therefore, governments and institutions are expected to cater for the wellbeing of their students and teachers. Plans to further digitalise higher education also needs to address the fact that students revealed a clear preference for face-to-face teacher-student interaction.

Finally, the results of the discussions on the first reactions to implications of COVID-19 for the Bologna Process, held at the Split BFUG Meeting in June 2020, included two main findings in relation to digitalisation in higher education:

- 1 | There is a need to improve the quality of online learning and teaching, in particular in relation to teacher skills development and practical elements of curricula and appropriate assessment methods.
- 2 | There is a challenge of an adequate infrastructure for accessibility of a good quality of teaching and learning resources. There is a need to provide appropriate devices to all students, in order to overcome digital gaps between institutions and students. Meanwhile, the digital skills of teachers need to be improved, and teachers and students need to have access to a good quality learning material.



## 7. Key Issues and Recommendations: Improving Inclusion in Digital Learning and Teaching

---

Following the review of the status quo and good practice examples across Asia and Europe, the authors identified various risks and opportunities for an inclusive digital learning and teaching environment in the next decade and summarised them in 4 'spotlight areas'. Policymakers and higher education leaders are encouraged to turn their attention to these 'spotlight areas' that conclude with recommendations for policymaking and institutional planning.

### Spotlight 1: Diversifying the Learning Process by Digital Tools

---

#### System Level Opportunities & Risks for Policymakers to Consider

---

##### **New technologies are opening HE to a more diverse range of students**

New generation online learning platforms, that enable anytime/anywhere access and blended learning possibilities, have increased the number and types of people who are able to engage in learning in HE, from traditional post-formal education HE students to lifelong learners at any stage of their career, who can interleave the learning with their work or family responsibilities (Lock et al., 2021).

In turn, this has led to a massive increase in the variety of available courses and micro credentials, which is beginning to influence a reconceptualisation of Higher Education's very purpose (from prioritising preparing young people for their future lives, to enabling all citizens to constantly grow their skills and expertise) (Kohler et al., 2021).

Finally, higher education is increasingly collaborating with external private-sector partners, which brings both opportunities (for example, innovative approaches that existing HE structures either preclude or impede) and risks (for example, HE both becoming more dependent on and losing expertise to the private-sector). In particular, it is important to guard against both technology becoming the master rather than the servant of HE, causing institutions to lose sight of their educational objectives, and the privatisation of HE by inattention, accident or stealth.

Other risks include the variability and flexibility made possible by new generation learning management systems that bring complexity and a potential lack of focus. These are speculative



but still need to be carefully considered. Complexity, in addition to opening choices, can mean more people making wrong choices, for their personal development and thus for national outcomes. Meanwhile, a lack of focus can mean a lack of strategic direction, leading to the 'wrong' subjects being offered, studied and valued, thus compromising a country's skills development.

### **New technologies are enhancing communication**

A new generation of communication technologies (such as Zoom, Teams, VooV and Google Hangouts) are facilitating a massive increase in collaborative research and teaching, both within and between countries, bringing new opportunities for institutions, educators and students to share and cooperate across national boundaries and time zones, benefiting all participants and their regions/countries (Wu et al., 2020).

However, a real risk is that these might lead to dependencies on proprietary and/or monopoly systems, and to compromising quality and/or reputation. In particular, undermining quality and reputation might compromise a country's aim to establish its position in the global context, and its ability to attract investment and international students.

The net result is that this increasing dependence on communication technologies might lead to a thinning out of a country's stable of HEIs, with offerings being consolidated and/or effectively replaced by some global brands (such as MIT in the USA and the University of Oxford in the UK, or one of the MOOC platforms such as Coursera). "In 50 years there will be only ten institutions in the world delivering higher education" as quoted by Sebastian Thrun, co-founder of the MOOC platform UDACITY (Leckhart & Cheshire, 2012).

#### **Recommendations for Policymakers - 1**

- Use available technology and COVID-19 momentum to reconceptualise part of higher education's very purpose, from prioritising preparing young people for their future lives, to enabling all citizens to constantly grow their skills and expertise.
- Invest in HEIs digital capacities (to develop digital teaching and content) in order to avoid their overdependence on private sector/international providers.



## Opportunities & Risks for Leaders of Higher Education Institutions to Consider

---

### New technologies can enable better ways to manage, teach and engage in learning

Institutions can leverage the potential of new technologies at several sub-levels. At the institutional sub-level, new technologies offer ways to better manage the learning process, from recruitment to assessment. For example, automatic systems have been developed to undertake an initial sifting of applications, to quickly identify those that need more detailed attention and those that do not meet minimum requirements. In addition, there has been a massive growth of automatic online assessments proctoring technologies that aim to facilitate trustworthy examinations at a distance.

At an educator sub-level, new technologies can save teachers time, as they delegate tasks to machines (such as marking assessments). Data-driven technologies can sometimes make it easier to monitor student progress, identifying those who are at risk of failure in order to prioritise pro-active support ahead of remediation. Hybrid or blended approaches to teaching also become possible, combining the benefits of both off-line and on-line teaching and learning. In addition, the capabilities of communication technologies mentioned earlier also provide HE educators with much simplified opportunities to share and collaborate across research and teaching.

Finally, at the student sub-level, an increasing range of new technologies, such as those driven by Artificial Intelligence, are providing opportunities for adaptive learning. They enabling each student to follow their own pathways through the learning material to the prescribed learning outcomes, making, it is argued, their learning increasingly 'efficient'. New technologies can also improve access to extracurricular activities and student governments, as well as foster cross-campus and cross-border student representation and collaboration activities.

For each opportunity, however, there is an associated risk. For example, at the institutional sub-level, applications sifting software has been criticised for being inaccurate and non-inclusive (Burke, 2020). Similarly, exam proctoring technologies are extremely controversial. It has been argued that they are intrusive, non-inclusive, massively add to student anxiety, and often inaccurate (preventing some legitimate students from even sitting their examinations) (Young, 2020). Even if the technology is improved to address these concerns, the question remains whether it is fair or sensible to delegate such life-changing decisions to machines.



At the educator sub-level, while data-driven technologies might provide additional information that teachers can use to enhance their teaching, we also have to remember that the data are proxies for only a small fraction of student learning. In particular, the data does not reflect offline learning opportunities such as reading books, field trips or collaboration, nor complex constructs such as student engagement. Furthermore, teachers should move away from the resurgent focus on educational content. New technologies make content easily available (especially in the form of Open Educational Resources). HEIs and teachers should, instead, focus on the teaching and learning. Teachers in HEIs need to ensure that the technologies that they employ do not adopt a mode of teaching that they have themselves rejected. Technologies should be chosen that complement the teacher's approach, not that constrain or redirect it.

Accordingly, we have to guard against too much trust being placed in data-driven analyses, outcomes can be informative but rarely definitive, and against 'what can be measured' becoming the overriding target of teaching. In addition, we have to recognise that student monitoring, although undertaken with the best of intentions, can all too often be little more than student surveillance, which many would suggest has no place in education (Stokel-Walker, 2020). HEIs and teachers need to be ever-vigilant for the unintended consequences of some technologies. For example, while data-driven monitoring of student ethnicity might aim to address discrimination, poor implementation might end up exacerbating rather than mitigating the problems.

Finally, at the student sub-level, adaptive technologies may well increase efficiencies (the time taken to progress towards prescribed learning outcomes), but contemporary examples tend simply to automate superficial understandings of poor and outmoded pedagogic practices, often attempting to replicate face-to-face classroom practices online rather than leveraging the possibilities of the new technologies. In so doing, they compromise the student experience, ignore the social dimensions of learning, and deny student agency and representation. In addition, data-based technologies raise substantial data-based issues such as data privacy, fairness, accountability, transparency and ownership, each of which needs to be unpacked in the particular context in question.



### Recommendations for HEI Leaders - 1

- Recognise that technology is a tool with many possibilities, while ensuring that these multiple possibilities do not obscure, dilute, cloud or complicate the institution's core purpose.
- Ensure that institutional goals always come first, for which technology should always be the servant.
- Explore the unique possibilities of practices and purposes which technology offers instead of simply automating traditional practices (for example, instead of automating examinations, use technology to devise new methods of assessment and accreditation).

## Spotlight 2: The Social Dimension of Digital Learning

### System Level Opportunities & Risks for Policymakers to Consider

#### Communication technologies are increasing human connections

New technologies are rapidly introducing new opportunities for human connections for HE at a system level. Enabling people to cooperate across boundaries inevitably helps nurture better understanding between disparate groups, both within and between countries: addressing and mitigating fears of the 'other', normalising intercultural sharing of ideas and values, reducing cultural tensions, making student democracy more accessible, and thus improving overall social well-being.

However, there are again simultaneously risks (Tomprou et al., 2021), with contemporary communication technologies all too often being purposed for nefarious reasons. Scandals such as that centred on Cambridge Analytica (Lapowsky, 2019) show how the data hoovered up by social media can be abused to promote so-called populist agendas thus undermining progressive calls for equity and inclusion. Similarly, social media itself has a tendency to develop echo-chambers (Barberá, 2020), by sharing only posts that both complement and exaggerate an individual's existing biases, while providing an unstoppable platform for fake-news, unsubstantiated slurs, and abuse.



## Tools to promote human values

New technologies also offer ways in which human values can be promoted and facilitated. For example, tools supported by Artificial Intelligence are being developed to enable people with disabilities. These include technologies, albeit still immature, that are able to automatically describe the content of images, to enable those with vision difficulties; and other technologies that convert between speech and sign language, to enable those with hearing difficulties. Such technologies are designed to, and have the potential to, make social interaction, including education, more inclusive for people with disabilities.

However, other new technologies, especially those that automate processes and decision making, can undermine human values and equity. For example, they can increase rather than reduce gaps in access and inclusion, as the requisite technologies are not easily available to all, leading to a Mathew Effect of the already-privileged benefitting more than those who are currently excluded. Although they might appear ubiquitous, mobile phones, tablets and laptop computers are not available to all, within higher-income as well as lower-income countries, meaning that all too many people around the world are by definition excluded from the promising developments. If you are unable to access the Internet, because of lack of infrastructure or lack of device, you will be unable to access the benefits that the technologies have been designed to bring. Forgetting this self-evident but all too often unnoticed reality can only make things worse.

### Recommendations for Policymakers - 2

- Provide space and technical support to ensure that the potential of communication technologies for inter- and intra-national collaborations can be leveraged, without excluding any stakeholders (including teachers and students), and without causing mental-health issues.



## Opportunities & Risks for Leaders of Higher Education Institutions to Consider

---

### The global shift to online teaching and its consequences

It was thanks to the affordances of communication technologies (such as Zoom, Teams, VooV and Google Hangouts), that during the COVID-19 pandemic HEIs were able to continue offering education to its students, albeit in limited form. Around the world, classes shifted to online delivery – even if for many, including those studying practical subjects such as medicine or mechanical engineering, the online version was rarely adequate. Indeed, the shift to online teaching led many institutions to make structural changes to their programmes and to offer new opportunities for their students. Similarly, these technologies helped enable more cross-border advocacy collaborations between student governments, such as the Global Student Government initiative.

However, the risks of online teaching and learning are increasingly becoming clear. Most importantly, the replacement of human face-to-face learning and personal interactions with online virtual engagement has been shown to impact negatively and seriously on the mental health of many students. Again, this highlights that participating in HE involves far more than narrow conceptions of academic achievement. It might sound trivial, but students also need access to non-academic human interactions (from sports to arts, social events, and student representation and advocacy), if the full potential of their time in HE is to be realised. In short, using online as a ‘better-than-nothing’ option, in the face of a global crisis, is one thing; using it as a permanent approach requires much research and careful consideration.

Finally, communication technologies also need to be fully accessible to students, their governments and organisations, so that the student voice is heard and not left behind. The risk is that, with poor access, students might be put at more of a disadvantage in education policy making processes and negotiations with other education stakeholders.

### Unrecognised possibilities and hidden risks of over-emphasis on technology

The development of a range of new technologies from adaptive tutoring to learning analytics opens up hitherto unrecognised possibilities. For example, adaptive tutoring promises to enable every individual student to experience a personalised learning journey throughout their



time in HE; while learning analytics helps identify those students who are at risk of failing, so that their teachers can intervene before the event horizon is crossed. The argument is that these technologies will enable more students to succeed in HE, while teaching is made more efficient and teachers are saved time. However, despite these economic and arguably laudable aspirations, the key risk is that of unintended consequences. Without doubt, the ambition of the developers is to enhance the learners' experience of HE. However, using such technologies inevitably means handing over decision making to automatic systems, increasing student surveillance, and homogenising learning outputs rather than enabling student self-actualisation, thus undermining human values.

An over-emphasis on the technology can mean adopting an instrumentalist and techno-solutionist approach, assuming that the technology helps solve social problems (such as those centred on access to and success within HE, which remains highly correlated with family income, gender and ethnicity). For example, learning analytics that includes ethnicity data aims to help address structural inequalities, and may well help many individual marginalised students. However, it does nothing to address the underlying structural inequities, and instead might unintentionally help sustain them. Further, these technologies that collate data on students' presence and behaviour on campus are by another name Big Brother-like surveillance tools, with unintended consequences for human values that are yet to be fully worked out. Similarly, it is important that student advocacy and representation not be replaced by automatic feedback mechanisms that isolate student voices and hinder collective student action.

Technologies which are going to be used should not tend to take over decision-making responsibility from teachers and institutions. While some technologies offer to save teacher time and to personalise student experience, they could end up as simple surveillance systems that require students to engage with individual screen-based activities for hours at a time, thus ignoring the importance and value of social or collaborative learning. Instead, technologies should be chosen to complement a teacher's approach, not to constrain or redirect it.

HEIs should identify and consider carefully what technologies will improve access (in terms of socioeconomic status, geography, age, migrant status and so on), and what technologies might reduce access – to avoid benefiting the already privileged at the expense of those who are all too often excluded.



### Recommendations for HEI Leaders - 2

- Do not assume that the online learning approach will be suitable in non-critical times as it has been during the COVID-19 pandemic. Face-to-face teaching and learning and engagement have repeatedly been shown to be better for learning and for students' more general well-being.
- Include a broad range of social and cultural experiences so as to not reduce student life in HE to a narrow range of academic activities

## Spotlight 3: Multidimensional Collaboration through Digital Education

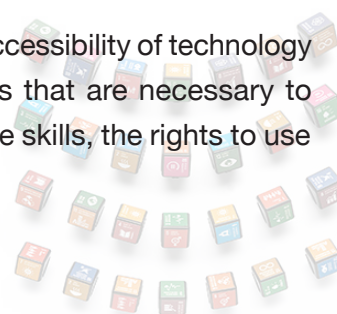
### System Level Opportunities & Risks for Policymakers to Consider

#### The development of newly emerging inequality

Advancement of technology has enabled online education and lifted off various physical distance hurdles, yet this also has created heavy dependence on access to technology (more specifically, Internet infrastructure) for education. There is a risk that accessibility to such digital environments will result in a wider divide among those with access and those without.

Research (DiMaggio & Hargittai, 2001) pointed out that as Internet penetration increases, the stakeholders should shift their attention from the 'digital divide' that is to highlight inequality between 'haves' and 'have-nots' differentiated by binary measures of access to or use of the new technologies, to 'digital inequality', by which they refer not just to differences in access, but also to inequality among persons with formal access to the Internet. Although some 20 years later, the COVID-19 impact on the education sector has revealed such inequalities in both developed and developing countries and regions.

Access to technology is a multidimensional concept. It is not only the accessibility of technology and access to information, but it also refers to further requirements that are necessary to appreciate digitally enhanced education, such as technical or cognitive skills, the rights to use



specific sources of information, and access to hardware all of which have to be considered. These further requirements may often be considered as unrelated individual constraints, yet these skills must be taken into consideration when we need to come up with remedies to bridge the gaps.

Digital inequality is a very real challenge, but not insurmountable. Digitally enhanced education remains a realm of great possibility. Policymakers must understand this new kind of inequality and use the great potential of digitally enhanced education to mitigate it. They need to ensure that digital learning is equitable, securing all learners' rights to education, and their rights within and through education to realise their potential and aspirations. They also need to ensure that it is inclusive, creates a 'culture of belonging' by responding to the diversity of needs among all learners, through increasing participation and reducing exclusion from and within education. The most critical and urgent first step to realise such an equitable and inclusive vision of digitally enhanced education is to improve online infrastructure at a national and regional scale.

### **Investment in digital education availability as a step forward to build civic and democratic inclusivity.**

When digital penetration and skills have increased, one can expect greater potential for digital technologies to contribute to strengthen democratic processes by different groups in society. By effectively connecting the civic sector and education sector, future community development can aim for better changes. Engagement in student government democracy can also be improved.

One important awareness to be addressed here is that there are underrepresented populations in the digital sphere. Many people have been left out of the benefits of digital technology. Digital dividends co-exist with digital divides. In many cases, we observe that digital technologies have expanded opportunities in various domains. However, their aggregate impact has fallen short and is unevenly distributed (World Bank, 2016). The further consequences from this uneven distribution is obvious. Digital technologies are transforming the worlds of business, work, and service delivery at a very rapid speed. Those who are left behind will be even more detached from the changes, resulting in neglect of basic human rights in the digital age (United Nations, 2019). What we need to prevent now is the potential risk of engendering a winner-take-all society (and economy) because of this uneven distribution.



A good digital education stands upon one's well-established digital literacy. Investing in digital literacy through education will benefit not only older generations and those with disabilities, but also students and youth, those disadvantaged by their lower income level, or those who are located in rural regions with less established infrastructure.

### Recommendations for Policymakers - 3

- Lay the foundations of an inclusive digital society, in which people use technology to build better lives in a more sustaining, trusting world, as a lesson learnt from the impact of the COVID-19 pandemic.
- Improve online infrastructure, providing a basic lifeline for education, to educate each member of society. Individuals should be given an opportunity to cultivate sufficient digital literacy skills through publicly provided training.

## Opportunities & Risks for Leaders of Higher Education Institutions to Consider

---

### Teaching is no longer an independent activity

HEIs have to accept that learning is no longer a silo activity (in fact, it never has been). Moving away from the idea that learning is a one-way process is the new mindset required because the collaborative nature of education is growing. Learners in digitally enhanced context are enabled to become active contributors rather than passive consumers. It is also important that the organisations foster supportive mindsets, adopt necessary digital tools, provide skills training, and support collective representation that help learners become empowered.

This dramatic transition triggered by the COVID-19 pandemic, for the education sector to pivot to digital platforms, has revealed multiple gaps and shortcomings in how online learning has been adopted in educational institutions. Some forms of emergency online learning are being criticised for failing to adhere to sound pedagogical principles (Hodges et al., 2020). Accordingly,



there is a need to put on a critical set of lenses to be wary about the (mis)conception that digital educational technologies offer quick fixes to every possible problem without further investigation into their intertwining pedagogical, political, social, and individual consequences.

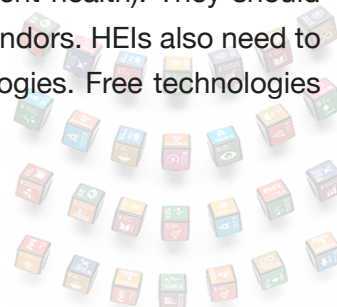
In order to avoid the risk that ed-tech businesses sell untested solutions into the education sector, individual institutions should further cultivate their own expertise in digital education.

### **The private sector as a potential, useful partner in the paradigm shift to digitally enhanced education for greater inclusion**

Many universities, both globally and locally are starting to expand their capacity for offering online programmes at both undergraduate and postgraduate levels, as well as to develop online and blended courses into qualifications. With the impact of COVID-19, the trend to adopt digital tools for education at HEIs has increased.

HEIs could work in partnership with private industry to re-design the skill learning process. Currently a considerable portion of learning is done informally, through ‘osmosis’ or by experience. However, private industry should not be allowed a controlling interest in education decision making or otherwise undermine publicly funded education and student representation within education systems. However, while collaboration can be useful, there are also various potential risks. While private company tools may enable universities to provide digital education at scale, such a collaboration can also generate an inflexible business model based on ‘one size approach’ due to the service design in package. This may lead to only ‘privileged’ students being supported, who are deemed marketable for the private company, going against becoming more inclusive. There can also be a reputational risk of close association with a particular private partner, and HEIs should be wary in cases where negative news on the company’s service develops (Czerniewicz & Walji, 2019).

Before buying into a new technology, particularly if that technology is proprietary or possibly controversial (such as e-proctoring or student monitoring technologies), HEIs should also undertake in-depth and comprehensive risk analyses, from the perspective of institutions, teachers and students (especially in terms of data privacy and student health). They should also adopt a critical attitude, questioning robustly the claims of the vendors. HEIs also need to avoid becoming dependent on proprietary and/or monopoly technologies. Free technologies



can be seductive, but HEIs should not assume that the technology will always be free or will always be accessible, or that its future development (especially if it is free) will be in sync with the needs of the institution.

### **Inclusive opportunities to provide higher level education to wider population**

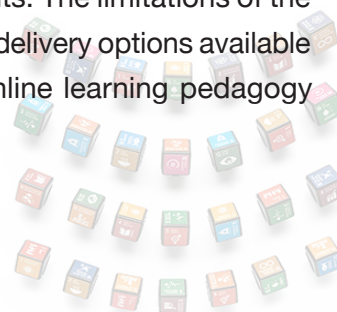
Technology is now being increasingly used as an assistive equipment for students with special needs. There are many tools that can provide support for those with visual disabilities, hearing impairments or mobility issues. People with visual impairments, for example, can greatly benefit from technologies in education (for example, Visolve, the software tool that transforms colours of the computer display into the discriminable colours for various people including people with colour vision deficiency).

A wider deployment of assisting technology could also build confidence of pre-HEI students to seek tertiary and continuing education. Universal design of learning platforms will also enable individual learning speeds for any students with or without disabilities.

Learning goes beyond the classroom in novel and potentially challenging ways, which makes it important to manage access to sensitive information and potentially harmful content. For K-12 education in particular, parents and carers now have additional responsibilities due to the increased use of digital applications for schoolwork. When parents and other carers don't have the required digital skills, it can be challenging for them to be fully involved in their child's learning. This can result in yet further social exclusion.

### **Limitations of the technology by universities may hinder opportunities**

In a time when measures for public health have severely strained education, digital teaching and learning has become the 'new normal'. However, identifying the right instruments and learning how to use them can be overwhelming for many educators. Teachers noted limited opportunities for engagement afforded by some technologies that they used, and others noted that there was often limited access to certain technologies by faculty and students. The limitations of the technology provided by universities may have contributed to the limited delivery options available to faculty. Coupled with limitations of foundational knowledge of online learning pedagogy



(Kilpatrick et al., 2021), access to technology compounds an already challenging scenario in which faculty were not fully prepared to leverage advanced technologies to support learning.

To remedy this risk, administration should look for ways to support faculty with learning designers and graduate assistants, as well as providing appropriate professional development opportunities. Faculty should develop digital literacy, if only to help them determine which technologies can support which types of engagement and teaching. HE teachers and others need high quality professional development; which depends on high quality appropriate pedagogy. Exchanging good practices with other institutions, peer support and mentoring groups are all useful strategies to help educators make the best use of technology to support teaching and learning.

### Recommendations for HEI Leaders - 3

- Create institutional guidelines on how to select appropriate digital instruments, which should be produced in collaboration by institutions, different sectors, and different stakeholders including teachers, students and even parents. Structured conversations and building a community around the use of digital technology can help reframe the institutions' strategies (Volungeviciene et al., 2021) and support the selection of appropriate technologies, reflecting on regionally-specific agendas and available synergies.

## Spotlight 4: Quality of Digital Opportunities

### System Level Opportunities & Risks for Policymakers to Consider

#### New technologies require the development of new skills

The technological progress generated by exponential technologies (for example, Artificial Intelligence) (Sherpa.ai, 2020) has become key to the business sector and the global economy. However, it has been difficult for HEIs to keep up with the fast pace of technological advancement. In addition, the COVID-19 pandemic has increased the growing mismatch between society's skills



and the jobs needed (WEF, 2021). According to the Future of Jobs Report 2020, “companies estimate that, by 2024, around 40% of workers will require reskilling of up to six months, and 94% of business leaders report that they expect employees to pick up new skills on the job – a sharp uptick from 65% in 2018” (WEF, 2020).

As a result, competency-based education demand is increasing steadily. According to Bechtel et al.’s analysis (2021), the ‘gig working’ economy is linked to the ‘gig learning’ economy. Employers now are requiring highly specialised skills that HEIs are not providing. Since people need to be employed, they are often opting for on-demand nano learning offerings that correspond to a niched skills-based educational credential that is obtained faster than traditional degrees (WEF, Bechtel et al, 2021). That is why some students are opting for getting this knowledge from non-formal institutions (for example, technology companies that offer certifications).

Now more than ever, HEIs need to bridge the skills gap between the job market needs and Higher Education degrees, develop competencies in exponential technologies (including AI) for teachers and students and adopt an agile approach for incorporating new topics into the curriculum.

#### Recommendations for Policymakers - 4

- Foster upskilling initiatives among government, HEI and Entrepreneurs by generating opportunities for exchanging information regarding the skills needed in the job market.
- Allocate funding for universities to develop competency-based training and incentivise HEI to incorporate exponential technologies to their curricula.

## Opportunities & Risks for Leaders of Higher Education Institutions to Consider

---

### **In an era of abundant content, HEIs need to be affordable and change their business models.**

The cost of higher education in many countries is very high. With the outbreak of COVID-19 and the shift to online forms of distance learning, students are wondering if it's worth paying the same for their education, given their perception regarding the quality of online programs and their economic difficulties. For example, in Japan, universities reported a drop in students' enrolment to higher education degrees due to financial difficulties and students' mental health (Kakuchi, 2021). In the UK, students think that their higher education programme presented poor value for money (Hall, 2021a), many students refused to pay their fees and some demanded tuition fee compensation (Fazackerley, 2021). As a result, HEIs might consider that the rising prices can make education unattainable for students. They now have an abundance of choices and the possibility to study virtually anywhere in the world.

Both universities and students have limited resources and they are trying to adapt to new ways of learning. In contrast, according to (Govindarajan et al., 2021) "...while traditional universities are facing budget cuts and financial pressures, the valuations of EdTech disruptors have skyrocketed, and they're awash with funds." To help students and professors, some institutions published digital learning solutions with online resources as MOOCs (such as Coursera, EdX, FutureLearn, etc.) and self-directed learning content (such as YouTube, Khan Academy, etc.). Now, students wonder if it is fair to continue paying high tuition costs (Hall, 2021b).

As a result, universities need to start changing their business models as digital technologies advance, which is starting to cause disruptive changes to the education model. Govindarajan, Srivastava, and Enache (2021) analysed how Harvard and MIT already started doing that by keeping a residential model for a few students but also providing high-quality education to the masses at affordable prices. In addition, the authors recommend that universities stop having their entire value chain in house and start thinking about unbundling the value chain and outsourcing areas where others have more competencies (Govindarajan et al., 2021). With the increasing demand for competency-based education, as well as students opting for free or subscription-based, informal education, additional pressures are put on HEI business models.



## **Students' engagement in online learning programmes encompasses meeting high-quality standards in media production, user experience, and social interaction**

HEIs now compete with the creative industries in terms of students' expectations when they consume videos/films/series on streaming platforms, podcasts, or video games. Since students are spending more time online and are becoming content creators themselves, they are becoming sensitive to the quality of online productions. For example, interfaces with a seamless user experience, excellent audio quality, and professional video production are expected from any HEI programme.

In addition, platforms need to develop more effective ways for students to connect with teachers and their peers, given that social interaction plays a key role in the effectiveness of online learning (Baber, 2021). The creation of online communities to support online programs is crucial to build trust among students and eliminate the sense of isolation (McInerney & Roberts, 2004).

## **Increasing quality of digital learning programmes by increasing their inclusivity.**

According to the World Health Organization, about 15% of the world's population lives with some form of disability. Digital technologies bring online education the possibility of removing barriers and generate inclusion through the implementation of international digital accessibility standards (such as EN 301 549, WCAG) in all public websites, software, eCourses, MOOCs and apps. In addition, assistive technology that uses AI and Machine Learning (ML) can be used to develop, identify, and remediate accessibility violations in an institution's digital offer. The standards comprise recommendations that help people with a wide variety of disabilities. HEIs can contribute to make their online offer more inclusive by making any content that is displayed online (text, images, sounds, code, or markup that defines structure, presentation, etc.) accessible to people with disabilities. Simple accommodations that have long been recommended but rarely implemented include:



- **Text:** providing a screen reader and enabling functions that allow the user to modify text size, spacing, line height.
- **Video, sound, and images:** providing descriptions, closed captioning, and pre-recorded sign language (when applicable).
- **Readability:** allowing users to modify the contrast of pages and have tools that will help the user read better (for example: a page mask or adding an index with the page structure).
- Maximising the compatibility with other assistive technologies.
- Not using content that causes seizures or physical reactions (W3C 2021).

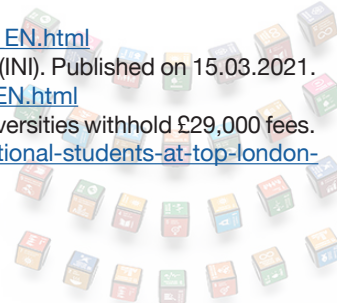
#### Recommendations for HEI Leaders - 4

- Ensure that the quality of digital content in terms of the platform's user experience, learning design, audio and video quality is high and respects shorter attention spans and gig learning economy.
- Prioritise learning platforms that have a good user experience, are customisable and allow integration in a wider ecosystem.
- Consider latency (the time it takes for data to travel from one point to another) when doing live virtual or hybrid events and invest in good internet connection.
- Design concise and actionable content that adapts to shorter attention spans.
- Understand the dynamics of the self-education industry and the gig learning economy, given that young people are less eager to invest a long time on developing a competency.



## References

- Baber, H. (2021). Social interaction and effectiveness of the online learning – A moderating role of maintaining social distance during the pandemic COVID-19. *Asian Education and Development Studies*.  
<https://doi.org/10.1108/AEDS-09-2020-0209>
- Barberá, P. (2020). 3 - Social Media, Echo Chambers, and Political Polarization. In N. Persily & J. A. Tucker (Eds.), *Social Media and Democracy*. Cambridge University Press.  
<https://doi.org/10.1017/9781108890960>
- Bunescu, L., & Gaebel, M. (2018). National Initiatives in Learning and Teaching in Europe A report from the European Forum for Enhanced Collaboration in Teaching (EFFECT) project.  
[www.eua.eu](http://www.eua.eu)
- Burke, L. (2020). The Death and Life of an Admissions Algorithm. *Inside Higher ED*.  
<https://www.insidehighered.com/admissions/article/2020/12/14/u-texas-will-stop-using-controversial-algorithm-evaluate-phd>
- Clarida, B. H., Bobeva, M., Hutchings, M., & Taylor, J. (2015). Strategies for Digital Inclusion: Towards a Pedagogy for Embracing and Sustaining Student Diversity and Engagement with Online Learning. *IAFOR Journal of Education*, 3(SE).  
<https://doi.org/10.22492/ije.3.se.06>
- Czerniewicz, L., & Walji, S. (2019). Issues for universities using private companies for online education. Cape Town: University of Cape Town, February.  
**Retrieved from:** [https://open.uct.ac.za/bitstream/handle/11427/29813/Czerniewicz\\_Walji2019.pdf](https://open.uct.ac.za/bitstream/handle/11427/29813/Czerniewicz_Walji2019.pdf)
- Council of the European Union (2020A). Council conclusions on digital education in Europe's knowledge societies (2020/C 415/10). In: *Official Journal of the European Union*. Published on 1.12.2020.  
**Retrieved from:** [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020XG1201\(02\)&rid=5](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020XG1201(02)&rid=5)
- Council of the European Union (2020B). Council conclusions on countering the COVID-19 crisis in education and training. (2020/C 212 I/03).  
**In:** *Official Journal of the European Union*. Published on 26.06.2020.  
**Retrieved from:** [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020XG0626\(01\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020XG0626(01)&from=EN)
- Council of the European Union (2021). The High-Level Event entitled "To Engage, to Care, to Foster – Digital Education Shaping Today's and Tomorrow's Societies".  
**Retrieved from:** <https://www.2021portugal.eu/en/news/high-level-event-on-digital-education/>
- DiMaggio, P., & Hargittai, E. (2001). From the ' Digital Divide ' to ' Digital Inequality ': Studying Internet Use as Penetration Increases. *Princeton Center for Arts and Cultural Policy Studies, Working Paper*, 15(15).
- Dong, L., Han, J., & Zhang, X. (2017). Application of Big Data in Online Education in China.  
<https://doi.org/10.2991/iccia-17.2017.121>
- Doolan, K., Barada, V., Burić, I., Krolo, K., & Tonković, Ž. (2020). Student Life During the Covid-19 Pandemic : Europe-Wide Insights (Issue June).  
**Retrieved from:** [https://ehea.info/Upload/BFUG\\_HR\\_UA\\_71\\_8\\_1\\_Survey\\_results.pdf](https://ehea.info/Upload/BFUG_HR_UA_71_8_1_Survey_results.pdf)
- Draffan, E., & Rainger, P. (2013). *Approaches to Developing Accessible Learning Experiences. Conceptualising Best Practice*. Routledge.
- European Commission (2020A). Achieving the European Education Area by 2025 - Communication. COM(2020) 625 final.  
**Retrieved from:** [https://ec.europa.eu/education/resources-and-tools/document-library/eea-communication-sept2020\\_en](https://ec.europa.eu/education/resources-and-tools/document-library/eea-communication-sept2020_en)
- European Commission (2020B). Digital Education Action Plan 2021-2027. Resetting education and training for the digital age. Published on 30.09.2020.  
**Retrieved from:** [https://ec.europa.eu/education/sites/default/files/document-library-docs/deap-communication-sept2020\\_en.pdf](https://ec.europa.eu/education/sites/default/files/document-library-docs/deap-communication-sept2020_en.pdf)
- EHEA (2020A). Rome Ministerial Communiqué.  
**Retrieved from:** [https://ehea.info/Upload/Rome\\_Ministerial\\_Communique.pdf](https://ehea.info/Upload/Rome_Ministerial_Communique.pdf)
- EHEA (2020B). Rome Ministerial Communiqué. Annex II.  
**Retrieved from:** [https://ehea.info/Upload/Rome\\_Ministerial\\_Communique\\_Annex\\_III.pdf](https://ehea.info/Upload/Rome_Ministerial_Communique_Annex_III.pdf)
- European Parliament (Oct 2020). The Future of European Education in the context of COVID-19 (2020/2760(RSP)). Published on 22.10.2020.  
**Retrieved from:** [https://www.europarl.europa.eu/doceo/document/TA-9-2020-0282\\_EN.html](https://www.europarl.europa.eu/doceo/document/TA-9-2020-0282_EN.html)
- European Parliament (Mar 2021). Report on shaping digital education policy (2020/2135(INI)). Published on 15.03.2021.  
**Retrieved from:** [https://www.europarl.europa.eu/doceo/document/A-9-2021-0042\\_EN.html](https://www.europarl.europa.eu/doceo/document/A-9-2021-0042_EN.html)
- Fazackerley, A. (2021). "Treated like cash cows": international students at top London universities withhold £29,000 fees.  
<https://www.theguardian.com/education/2021/mar/13/treated-like-cash-cows-international-students-at-top-london-universities-withhold-29000-fees%0A>



- Gaebel, M., Zhang, T., Stoeber, H., & Morrisroe, A. (2021). Digitally enhanced learning and teaching in European higher education institutions.  
<https://eua.eu/resources/publications/954:digitally-enhanced-learning-and-teaching-in-european-higher-education-institutions.html>
- Govindarajan, V., Srivastava, A., & Enache, L. (2021). What the edX Acquisition Means for the Future of Higher Education. Harvard Business Review.  
<https://hbr.org/2021/07/what-the-edx-acquisition-means-for-the-future-of-higher-education>
- Hall, R. (2021a). Half of UK university students think degree is poor value for money.  
<https://www.theguardian.com/education/2021/jun/24/half-of-uk-university-students-think-degree-is-poor-value-for-money>
- Hall, R. (2021b). UK students want tuition fees refunded as they face third year online.  
<https://www.theguardian.com/education/2021/jun/26/uk-students-want-tuition-fees-refunded-as-they-face-third-year-online>
- Helsper, E. J. and Eynon, R. (2010) Digital natives: where is the evidence?, British Educational Research Journal, vol. 36, no. 3 [Online]. (Accessed 10 April 2013).
- Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The Difference Between Emergency Remote Teaching and Online Learning. Educause.
- Jørgensen, T. (2019). Digital skills: where universities matter. In Learning and Teaching Paper (Issue 7).  
<https://eua.eu/resources/publications/851:digital-skills---where-universities-matter.html>
- Kakuchi, S. (2021). Student Dropout Rate on the Rise Due to Pandemic Impact. University World News. <https://www.universityworldnews.com/post.php?story=2021031006383627>
- Kilpatrick, J., Ehrlich, S., & Bartlett, M. (2021). Learning from COVID-19: Universal Design for Learning Implementation Prior to and During a Pandemic. The Journal of Applied Instructional Design.
- Kohler, M., Gamrat, C., Raish, V., & Gross, E. (2021). Microlearning and Micro-Credentials in Higher Education. In Microlearning in the Digital Age.  
<https://doi.org/10.4324/9780367821623-10>
- Lapowsky, I. (2019). How Cambridge Analytica Sparked the Great Privacy Awakening. In: WIRED. 17.03.2019.  
**Retrieved from:** <https://www.wired.com/story/cambridge-analytica-facebook-privacy-awakening/>
- Liu, J. (2020). Lessons Learned from China: Bridging the Digital Divide During COVID-19. NORRAG BLOG.  
<https://www.norrag.org/lessons-learned-from-china-bridging-the-digital-divide-during-covid-19-by-ji-liu/>
- Lock, J., Lakkhal, S., Cleveland-Innes, M., Arancibia, P., Dell, D., & De Silva, N. (2021). Creating technology-enabled lifelong learning: A heutagogical approach. British Journal of Educational Technology, 52(4).  
<https://doi.org/10.1111/bjet.13122>
- McInerney, J. M., & Roberts, T. S. (2004). Online learning: Social interaction and the creation of a sense of community. In Educational Technology and Society (Vol. 7, Issue 3).
- Natarajan, U. (2020). Reflections on Emerging Opportunities for Rethinking Teaching and Learning. Singteach.  
<https://singteach.nie.edu.sg/2020/11/03/reflections-on-emerging-opportunities-for-rethinking-teaching-and-learning/>
- NXPO. (2020). Study Report on Higher Education, Science, Research and Innovation Measures for Economic and Social Rehabilitation and Reform.  
<https://www.nxpo.or.th/th/en/4830/>
- Obe, M., & Okutsu, A. (2020). Coronavirus forces Japan schools to grapple with online education. Nikkei Asia.  
<https://asia.nikkei.com/Business/Technology/Coronavirus-forces-Japan-schools-to-grapple-with-online-education>
- Sharon, A. (2021). Malaysia sets new digital learning ambitions. OpenGov Asia.  
<https://opengovasia.com/malaysia-sets-new-digital-learning-ambitions/>
- Sherpa.ai portal (Sept 2020). 20 Exponential Technologies that will drive Innovation.  
<https://sherpa.ai/blog/20-exponential-technologies-that-will-drive-innovation/>
- Stokel-Walker, C. (2020) Universities are using surveillance software to spy on students. In: WIRED, 15.10.2020.  
**Retrieved from:** <https://www.wired.co.uk/article/university-covid-learning-student-monitoring>
- Tan, E. C. (2021). Opening Speech in the Temasek-NUS Programme for Leadership in University Management (TF-NUS PLUM). Southeast Asia Leaders' Summit 2021. 26-27 April 2021.
- Tlili, A., Huang, R., Chang, T.-W., Nascimbeni, F., & Burgos, D. (2019). Open Educational Resources and Practices in China: A Systematic Literature Review. Sustainability, 11(18):486.  
<https://doi.org/10.3390/su11184867>
- Tomprou, M., Kim, Y. J., Chikersal, P., Woolley, A. W., & Dabbish, L. A. (2021). Speaking out of turn: How video conferencing reduces vocal synchrony and collective intelligence. PLoS ONE, 16(3 March).  
<https://doi.org/10.1371/journal.pone.0247655>



- United Nations. (2019). UN high level panel on digital cooperation - the age of digital interdependence. <https://www.un.org/en/pdfs/DigitalCooperation-report-for-web.pdf>
- Volungeviciene, A., Brown, M., Greenspon, R., Gaebel, M., Morrisroe, A., & (Belgium), EUA (EUA). (2021). Developing a High Performance Digital Education Ecosystem: Institutional Self-Assessment Instruments. In European University Association (Issue January). [https://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=ED611017&site=ehost-live%0Ahttps://eua.eu/downloads/publications/digi-he\\_desk\\_research\\_report.pdf](https://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=ED611017&site=ehost-live%0Ahttps://eua.eu/downloads/publications/digi-he_desk_research_report.pdf)
- Weko, T., & Morley, C. (2020). The digitalisation of higher education: Risks, benefits and opportunities for improvement. OECD. [https://www.msmt.cz/file/54022\\_1\\_1](https://www.msmt.cz/file/54022_1_1)
- Winthrop, R., & Ziegler, L. (2019). Leave No One Behind Time for Specifics on the Sustainable Development Goals (H. Kharas, J. W. McArthur, & I. Ohno (eds.)). Brookings Institution Press. <https://www.brookings.edu/book/leave-no-one-behind/>
- World Bank (2016). World Bank. 2016. World Development Report 2016: Digital Dividends. <https://doi.org/10.1596/978-1-4648-0671-1>
- World Economic Forum (WEF) (2020) The Future of Jobs Report 2020. <https://www.weforum.org/reports/the-future-of-jobs-report-2020/>
- World Economic Forum (WEF) (2021). Upskilling for Shared Prosperity. Insights Report. World Economic Forum in collaboration with PwC, January 2021. [http://www3.weforum.org/docs/WEF\\_Upskilling\\_for\\_Shared\\_Prosperty\\_2021.pdf](http://www3.weforum.org/docs/WEF_Upskilling_for_Shared_Prosperty_2021.pdf)
- World Economic Forum (WEF) (2021) Technology Futures: Projecting the Possible, Navigating What's Next. World Economic Forum in collaboration with Deloitte, April 2021. [http://www3.weforum.org/docs/WEF\\_Technology\\_Futures\\_GTGS\\_2021.pdf](http://www3.weforum.org/docs/WEF_Technology_Futures_GTGS_2021.pdf)
- World Health Organization and The World Bank (2011). World Report on Disability. Malta: World Health Organization, 2011. <https://www.who.int/teams/noncommunicable-diseases/sensory-functions-disability-and-rehabilitation/world-report-on-disability>
- W3C Web Accessibility (2021). Web Content Accessibility Guidelines (WCAG) Overview. Web Accessibility Initiative (WAI). <https://www.w3.org/WAI/standards-guidelines/wcag/>
- Wu, A., Noël, G. P. J. C., Wingate, R., Kielstein, H., Sakurai, T., Viranta-Kovanen, S., Chien, C. L., Traxler, H., Waschke, J., Vielmuth, F., Sagoo, M. G., Kitahara, S., Kato, Y., Keay, K. A., Olsen, J., & Bernd, P. (2020). An international partnership of 12 anatomy departments – improving global health through internationalization of medical education. *Annals of Global Health*, 86(1). <https://doi.org/10.5334/aogh.2665>
- Young, J. R. (2020). Pushback Is Growing Against Automated Proctoring Services. But So Is Their Use. EdSurge. <https://www.edsurge.com/news/2020-11-13-pushback-is-growing-against-automated-proctoring-services-but-so-is-their-use>

